REMARKS

Applicant thanks the Examiner for the through examination of the application. Responsive to the FINAL Office Action mailed on May 15, 2006, in the above-referenced application, Applicant respectfully requests entry of the foregoing amendments and that the patent be granted in view of the remarks presented herein. No new matter has been added by these amendments.

Present Status of Application

Claims 1-19 and 25-29 are amended to recite the limitations of "wherein said shield is vertically adjustably movable during an electroplating process", "plate shaped ring body", and "the cathode and wafer are rotatable". Applicant's previous amendment to these claims was objected to as introducing new matter into the application. The present amendment is made to address and overcome this objection.

Similarly, claims 1-19 and 25-29 were rejected under 35 U.S.C. 112 as failing to comply with the written description requirement. This rejection is rendered moot by the present amendments.

On a substantive, prior art basis, claims 1-4, 6-9, 11-15, 18, 19, 25 and 27 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Ueno (US 6,391,168) in view of Mayer et al. (US 6,402,923). Claims 5, 10, 16 and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno (US 6,391,168) in view of Mayer et al. (US 6,402,923), and further in view of Cheng et al. (US 6,890,413). Finally, claims 26, 28 and 29 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno (US 6,391,168) in view of Mayer et al. (US 6,402,923), and further in view of Reid et al. (US 6,074,544).

In response, claims 1, 2, 5, 7, 9, 10, 12, 13, 16, and 29 are amended herein, and claims 6, 8, 11, 17, 18, 26, and 28 are canceled. Support for the amended independent claims 1, 7, and 12 is found in at least

paragraph [0053] of the application. Accordingly, the amendment introduces no new matter to the application. Applicant submits that the present amendments render the rejections moot. Notwithstanding, Applicant offers the following additional distinguishing comments.

Claims 1-19 and 25-29 were rejected under 35 U.S.C. 112 as allegedly failing to comply with the written description requirement. As set forth above, Applicant has amended the claims relevant to this issue, and respectfully asserts that the objection has been accommodated. Specifically, applicant has amended claims 1, 2, 7, 12, 13, and canceled claims 26 and 28 to solve the issues.

Rejections Under 35 U.S.C. 103(a) of claims 1-4, 6-9, 11-15, 18, 19, 25 and 27

Claims 1-4, 6-9, 11-15, 18, 19, 25 and 27 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Ueno (US 6,391,168) in view of Mayer et al. (US 6,402,923). Applicant respectfully requests reconsideration for at least the following reaons.

As amended, claim 1 recites:

> 1. An electroplating apparatus comprising:
> a reservoir for holding an electrolyte fluid comprising metal ions for electroplating;
> an anode and a cathode, said cathode for holding a wafer provided in said reservoir;
> an electrical pathway provided between said cathode and said anode; and
> a shield provided between said cathode and said anode, wherein ***said shield is imparted a positive charge to act as an anode.***

(Emphasis Added) It is clear that the electroplating apparatus in amended claim 1 comprises said shield is imparted a positive charge to act as an anode.

In page 4 and 5, the Office Action asserts that Ueno teaches an electroplating apparatus and Mayer discloses the shield is vertically movable. In page 10, the Office Action further asserts that "The difference between the reference to Ueno and the instant claims is that the reference does not explicitly teach applying a negative charge to the shield. **Cheng et al. teach applying a negative charge to the shield 40 (figure 1)** to control the current densities.... Cheng, however, does not teach or suggest said shield is imparted a positive charge to act as an anode in amended claim 1.

Importantly, however, the combination of the references do not achieve the claimed feature of **said shield imparted a positive charge to act as an anode,** as specified in amended claim 1.

MPEP 2142 reads in part:

> To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In connection with the third criteria, MPEP 2143.03 goes on the state:

> To establish prima facie obviousness of a claimed invention, **all the claim limitations must be taught or suggested by the prior art.** In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Applicant therefore submits Ueno, Mayer, and Cheng (even if properly combined) collectively fail to teach or suggest all of the limitations recited in amended claim 1. For at least this reason, amended claim 1 is allowable over the cited reference. Reconsideration of this rejection is hereby respectfully requested.

As amended, claim 7 recites:

7. An electroplating apparatus for increasing a plated metal thickness uniformity comprising:

a reservoir for holding an electrolyte fluid comprising metal ions for electroplating;

an anode and a cathode, said cathode for holding a wafer provided in said reservoir;

an electrical pathway provided between said cathode and said anode; and

a shield provided between said cathode and said anode, said shield having a ring-shaped shield body, wherein ***an electrically-conductive material is provided on said shield and said shield is imparted a positive charge to act as an anode.***

(Emphasis Added) As emphasized above, the electroplating apparatus for increasing a plated metal thickness uniformity in amended claim 7 comprises an electrically-conductive material is provided on said shield and said shield is imparted a positive charge to act as an anode.

For reasons similar to those described in connection with claim 1, Ueno, Mayer, and Cheng also collectively fail to teach or suggest an electrically-conductive material provided on said shield and said shield imparted a positive charge to act as an anode in amended claim 7. For at least this reason, claim 7 is allowable over the cited references. Reconsideration of this rejection is hereby respectfully requested.

As amended, claim 12 recites:

12. A method of electroplating a metal on a wafer to increase a plated metal thickness uniformity, comprising:

providing a reservoir containing an electrolyte fluid metal ions for electroplating;

providing an anode and a cathode in said reservoir, said cathode holding a wafer provided in said reservoir;

providing an electrical pathway between said cathode and said anode;

providing a shield in said electrolyte fluid between said cathode and said anode;

imparting a positive charge to the shield to act as an anode; and

applying a current to said cathode and said anode to plate said metal ions onto said wafer in said electroplating process.

(Emphasis Added) As emphasized above, the method of electroplating a metal on a wafer to increase a plated metal thickness uniformity in amended claim 12 comprises imparting a positive charge to the shield to act as an anode.

For reasons similar to those described in connection with claim 1, Ueno, Mayer and Cheng also collectively fails to teach or suggest imparting a positive charge to the shield to act as an anode in amended claim 12. For at least this reason, claim 12 is allowable over the cited references. Reconsideration of this rejection is hereby respectfully requested.

For at least the foregoing reasons, amended claim 1, 7 and 12 are allowable over the cited reference. Insofar as claim 2, 3, 4, 9, 13, 14, 15, 18, 19, 25 and 27 depend from amended claim 1, 7, or 12, these claims are also allowable at least by virtue of their dependency.

Rejections Under 35 U.S.C. 103(a) of claims 5, 10, 16, 17, 26, 28 and 29

Claims 5, 10, 16 and 17 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Ueno (US 6,391,168) in view of Mayer et al. (US 6,402,923), and further in view of Cheng et al. (US 6,890,413). Claims 26, 28 and 29 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Ueno (US 6,391,168) in view of Mayer et al. (US 6,402,923), and further in view of Reid et al. (US 6,074,544). Insofar as claim 5, 10, 16, and 29 depend from amended claim 1, 7, or 12, these claims are also allowable at least by virtue of their dependency.

As a separate and independent basis for the patentability of all claims, Applicant respectfully traverses the rejections as failing to identify a proper basis for combining the cited references. In combining these references, the Office Action stated only that the combination would have been obvious "because the potential drop along the radial vector changes with time

as the copper plating on the wafer increases in thickness, thus vertically moving the shield during electroplating enhances plating uniformity by compensating for the potential changes." (Office Action, page 6). This merely sets forth a perceived/subjective benefit of combining the references, but does not set forth a motivation (without hindsight) that would lead one to combine the references, and as such, this alleged motivation is clearly improper in view of well-established Federal Circuit precedent.

It is well-settled law that in order to properly support an obviousness rejection under 35 U.S.C. § 103, there must have been some teaching in the prior art to suggest to one skilled in the art that the claimed invention would have been obvious. W. L. Gore & Associates, Inc. v. Garlock Thomas, Inc., 721 F.2d 1540, 1551 (Fed. Cir. 1983). More significantly,

> "The consistent criteria for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this [invention] should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. ..." Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure... In determining whether such a suggestion can fairly be gleaned from the prior art, the full field of the invention must be considered; for the person of ordinary skill in the art is charged with knowledge of the entire body of technological literature, including that which might lead away from the claimed invention."

(*Emphasis added.*) In re Dow Chemical Company, 837 F.2d 469, 473 (Fed. Cir. 1988).

In this regard, Applicant notes that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the prior art to suggest both the combination of elements and the structure resulting from the combination. Stiftung v. Renishaw PLC, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more prior art references, the prior art must properly suggest the desirability of combining the particular elements to derive an electroplating apparatus, as claimed by the Applicant.

When an obviousness determination is based on multiple prior art references, there must be a showing of some "teaching, suggestion, or reason" to combine the references. Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1383 (Fed. Cir. 1997) (also noting that the "absence of such a suggestion to combine is dispositive in an obviousness determination").

Evidence of a suggestion, teaching, or motivation to combine prior art references may flow, inter alia, from the references themselves, the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved. See In re Dembiczak, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in whatever form, must nevertheless be "clear and particular." Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617.

If there was no motivation or suggestion to combine selective teachings from multiple prior art references, one of ordinary skill in the art would not have viewed the present invention as obvious. See In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); Gambro Lundia AB, 110 F.3d at 1579, 42 USPQ2d at 1383 ("The absence of such a suggestion to combine is dispositive in an obviousness determination.").

Significantly, where there is no apparent disadvantage present in a particular prior art reference, then generally there can be no motivation to combine the teaching of another reference with the particular prior art reference. Winner Int'l Royalty Corp. v. Wang, No 98-1553 (Fed. Cir. January 27, 2000). The rationales relied on by the Office Action in the present application are merely generic statements, that have nothing to do specifically with the structures disclosed in the other references. As such, these rationales cannot be properly viewed as proper

motivations for combining the specific teachings of the individual references. Indeed, the generic motivations advanced by the present Office Action could be used to support a combination of ANY references, which is clearly contra to the cited Federal Circuit precedent and the clear intent of 35 U.S.C. § 103.

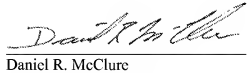
For at least the additional reason that the Office Action failed to identify proper motivations or suggestions for combining the various references to properly support the rejections under 35 U.S.C. § 103, those rejections should be withdrawn.

CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicant respectfully submits that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the pending claims are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

A credit card authorization is provided to cover the fees for the accompanying RCE application and petition for extension of time. No additional fee is believed to be due in connection with this amendment and response to Office Action. If, however, any additional fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

By: 

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